

(12) UK Patent Application (19) GB (11) 2 321 018 (13) A

(43) Date of A Publication 15.07.1998

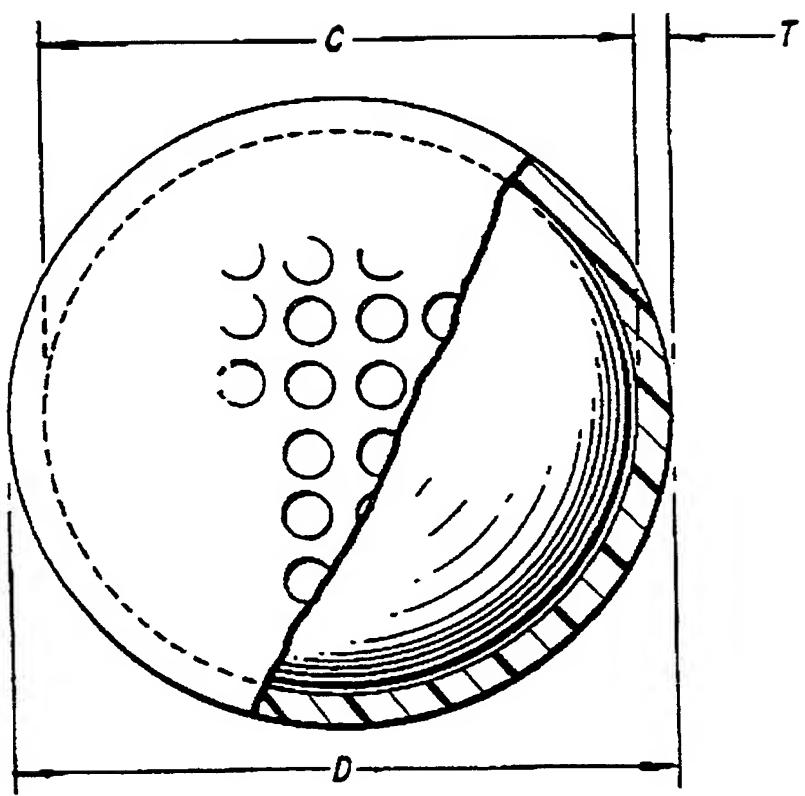
(21) Application No 9722641.9	(51) INT CL ⁶ A63B 37/00
(22) Date of Filing 28.10.1997	(52) UK CL (Edition P) A6D DAB
(30) Priority Data (31) 08782199 (32) 10.01.1997 (33) US	(56) Documents Cited GB 2302037 A US 5470075 A US 4201384 A
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(54) Abstract Title
Golf ball

(57) A golf ball of improved playing characteristics weighs no more than substantially 1.62 ounces and has a core and an outer cover, an outside diameter in the range substantially 1.73 inches (4.3942 cm) to substantially 1.75 inches (4.445 cm), an outer cover thickness of substantially 0.125 inches (0.3175 cm) or greater, and a cover hardness of Shore D60 or greater.

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GOLF BALL

This invention relates to golf balls. In particular, it relates to a two-piece golf ball having playability characteristics which are improved relative to state-of-the-art balls.

According to United States Golf Association (U.S.G.A.) rules, a golf ball may not have a weight in excess of 1.620 ounces (45.926 grams) or a diameter smaller than 1.680 inches (4.267 cm). The initial velocity of U.S.G.A. "regulation" balls may not exceed 250 feet per second (76.2 meters per second) with a maximum tolerance of 2%. Initial velocity is measured on a standard machine kept by the U.S.G.A. A projection on a wheel rotating at a defined speed hits the test ball, and the length of time it takes the ball to traverse a set distance after impact is measured. U.S.G.A. regulations also require that a ball not travel a distance greater than 280 yards (256.032 meters) when hit by the U.S.G.A. outdoor driving machine under specified conditions. In addition to this specification, there is a tolerance plus 4% and a 2% tolerance for test error.

These specifications limit how far a golf ball will travel when hit in several ways. Increasing the weight of a golf ball tends to increase the distance it will travel and lower the trajectory. A ball having greater momentum is better able to overcome drag. Reducing the diameter of the ball also has the effect of increasing the distance it will travel when hit. This is believed to occur primarily because a smaller ball has a smaller projected area and, thus, a lower drag when travelling through the air. Increasing initial velocity increases the distance the ball will travel.

The foregoing generalizations hold when the effect of size, weight, or initial velocity is measured in isolation. Flight characteristics (influenced by dimple pattern and ball rotation properties), club head speed, launch angle, radius of gyration, and diverse other factors also influence the distance a ball will travel.

In the manufacture of top-grade golf balls for use by professional golfers and amateur golf enthusiasts, the distance a ball will travel when hit (hereinafter referred to as "distance") is an important design criterion. Since the U.S.G.A. rules were established, golf ball manufacturers have designed top-grade U.S.G.A. regulation balls to be as close to the maximum weight, minimum diameter, and maximum initial velocity as golf ball technology will permit. The distance a ball will travel when hit has, however, been

improved by changes in raw materials, construction, and by alteration in dimple configuration.

Golf balls not conforming to U.S.G.A. specifications in various respects have been made in the United States. Prior to the effective date of the U.S.G.A. rules, balls of various weights, diameters, and resiliencies were common. So-called "rabbit balls", which claim to exceed the U.S.G.A. initial velocity limitations, have also been offered for sale. Recently, oversized, overweight golf balls have been on sale for use as golf teaching aids (see U.S. Patent No. 4,201,384 issued to Barber).

Oversized golf balls are also disclosed in New Zealand Patent 192,618 dated Jan. 1, 1980, issued to a predecessor of the present assignee. This patent discloses an oversized golf ball having a diameter between 1.700 (4.318 cm) and 1.730 inches (4.394 cm) and an oversized core of resilient material so as to increase the coefficient of restitution. Additionally, the patent discloses that the ball include a cover having a thickness less than the cover thickness of conventional golf balls.

The ball being manufactured under the name TOP-FLITE as set forth in the U.S. Patent 5,273,287 has a diameter of substantially 1.72 inches (4.369 cm) and a cover thickness of substantially 0.88 inches (2.235 cm).

Golf balls made by Spalding in 1915 were of a diameter ranging from 1.630 inches (4.1402 cm). As the diameter of the ball increased, the weight of the ball also increased.

Golf balls known as the LYNX JUMBO were also produced and sold in October of 1979. This ball had a diameter of substantially 1.80 inches (4.572 cm). This ball met with little or no commercial success.

Top-grade golf balls sold in the United States may be classified as one of two types: two-piece or three-piece. The two-piece ball, exemplified by the balls sold by Spalding Corporation under the trademark TOP-FLITE, consists of a solid polymeric core and a separately formed cover. The so-called three-piece balls, exemplified by the balls sold under the trademark TITLEIST by the Acushnet Company, consist of a liquid (e.g. TITLEIST TOUR 384) or solid (e.g., TITLEIST DT) center, elastomeric thread windings about the center, and a cover. Although the nature of the cover can, in certain instances, make a significant contribution to the overall coefficient of restitution and initial velocity .

of a ball (see, for example, U.S. Patent No. 3,819,768 issued to Molitor), the initial velocity of two-piece and three-piece balls is determined mainly by the coefficient of restitution of the core. The coefficient of restitution of the core of wound balls can be controlled within limits by regulating the winding tension and the thread and center composition. With respect to two-piece balls, the coefficient of restitution of the core is a function of the properties of the elastomer composition from which it is made. Solid cores today are typically molded using polybutadiene elastomers mixed with acrylate or methacrylate metal salts. High-density fillers such as zinc oxide are included in the core material in order to achieve the maximum U.S.G.A. weight limit.

Improvements in cover and core material formulations and changes in dimple patterns have more or less continually improved golf ball distance for the last 20 years. Top-grade golf balls, however, must meet several other important design criteria. To successfully compete in today's golf ball market, a golf ball should be resistant to cutting and must be finished well; it should hold a line in putting and should have good click and feel. With a well-designed ball, experienced players, can better execute shots involving draw, fade, or abrupt stops, as the situation dictates.

The present invention provides a golf ball of improved playing characteristics, comprising:

a core;

an outer cover having a hardness of at least substantially Shore D60, said cover having a thickness of at least substantially 0.125 inches (0.3175 cm); and

said ball has an outside diameter in the range substantially 1.73 inches (4.3942 cm) to substantially 1.75 inches (4.445 cm).

In accordance with said ball of the present invention, one example of that ball may be a two-piece golf ball. The diameter of said core may be dependent upon a selection of said outside diameter(which may be a mean outside diameter)and said cover thickness. Said cover hardness may be a hardness between Shore D60 and Shore D80. Said cover hardness may be a hardness between Shore D65 and Shore D75. Said cover hardness may be a hardness between Shore D65 and Shore D70. Said cover may have a thickness in the range substantially 0.125 inches (0.3175 cm) to substantially 0.184 inches (0.4674 cm). Said cover may have a thickness in the range substantially

0.125 inches (0.3175 cm) to substantially 0.150 inches (0.381 cm). Said cover may have a thickness in the range substantially 0.125 inches (0.3175 cm) to substantially 0.145 inches (0.3683 cm). Said cover thickness may be a thickness of substantially 0.135 inches (0.3429 cm). Said outside diameter may be substantially 1.74 inches (4.4196 cm). Said core may have a diameter C, said outside diameter may have a diameter D, and said cover thickness may be a thickness T, such that $D = C + 2T$. Said golf ball of the present invention may have a weight of no greater than substantially 1.62 ounces (45.9262 grams). Said golf ball of the present invention may be a dimpled golf ball, for example one having a tri-dimple pattern having 422 dimples.

The golf ball of the present invention provides an improvement over previously proposed oversized golf balls. The present ball, even though of a larger diameter of at least 1.73 inches (4.3942 cm), preferably uses substantially the same size core or smaller than a standard golf ball, with the difference in size being provided by additional thickness in the cover of the ball. The ball may have a cover thickness of at least substantially 0.125 inches (0.3175 cm), a cover hardness of Shore D60 or greater, and a weight no greater than substantially 1.62 ounces (45.9262 grams).

The present invention will now be described by way of example with reference to the accompanying drawing, which is a partially sectioned view of one example of a golf ball of the present invention.

The drawing relates to one example of the general construction of a two-piece golf ball. The ball has an outside diameter D, a core diameter C, and a cover thickness T. The outside diameter D is equal to $C + 2T$.

The ball of the drawing has an outside diameter D in the range 1.73 inches (4.3942 cm) to 1.75 inches (4.445 cm) and a cover thickness T in the range 0.125 inches (0.3175 cm) to 0.145 inches (0.3683 cm). The diameter C of the core is dependent upon the selected outside diameter and cover thickness.

The golf ball currently manufactured under U.S. Patent 5,273,287 is substantially 1.72 inches (4.3688 cm) in diameter, weighs substantially 1.62 ounces (45.9262 grams), and has a cover thickness of substantially 0.088 inches (0.2235 cm). The ball is available under the registered trademark Top-Flite Magna. The following test results compared this ball with a ball having a diameter of substantially 1.74 (4.4196 cm) and a cover

thickness of substantially 0.135 inches (0.3429 cm). Both balls have the same basic dimple pattern which in these tests is a tri-dimple pattern having 422 dimples as shown and described in U.S. Patent 5,273,287 relative to Figs. 3 and 4 of that patent.

As used below, "fps" = feet per second, and "mps" = meters per second.

Test #1 - Distance

LAUNCH CONDITIONS

Club Type	5 Iron
Clubhead Speed fps (mps)	123 (37.4904)
Launch Angle (deg)	15.3
Ball Speed fps (mps)	167 (50.9016)
Spin Rate (rpm)	5966

Ball	Carry yds (meters)	Carry diff yds (meters)	Roll yds (meters)	Total yds (meters)	Total diff yds (meters)
TOP-FLITE 1.72	163.0 (149.05)	-0.8 (-0.73)	3.8 (3.5)	166.8 (152.5)	-1.6 (-1.46)
Magna					
1.74 Magna	163.8 (149.05)	-0.0	4.6 (4.21)	168.4 (153.98)	0.0

Test #2 - Distance

LAUNCH CONDITIONS

Club Type	Driver
Clubhead Speed fps (mps)	140 (42.672)
Launch Angle (deg)	9.2
Ball Speed fps (mps)	195 (59.436)
Spin Rate (rpm)	3133

Ball	Carry yds (meters)	Carry diff yds (meters)	Roll yds (meters)	Total yds (meters)	Total diff yds (meters)
TOP-FLITE 1.72	206.0 (188.4)	0.0 (-4.1)	13.5 (12.3)	219.5 (200.7)	0.0 -1.2
Magna					
1.74 Magna	201.9 (184.6)	-4.1 (-3.8)	16.4 (15.00)	218.3 (199.6)	-1.2 (-1.1)

Test #3 - Spin Test

Miya Driving machine setup with TOP-FLITE Tour 9 iron

Full face shot

CHS approx. 105.fps
(32.0 mps)

Ball	L.A. (deg)	Ball Speed fps (mps)	Spin (rpm)	Moment of Inertia
TOP-FLITE 1.72	32.4	110.7 (33.7)	7746	0.465
Magna				
1.74 Magna	32.9	110.2 (33.6)	7313	0.479

Test #3 shows that the 1.74 inch (4.4196 cm) ball has a higher moment of inertia and, correspondingly, has a lower spin rate than the 1.72 inch (4.3688 cm) ball.

Test #1 and #2 show that the 1.74 inch (4.4196 cm) ball is comparable in distance to the smaller ball and, in fact, a little longer in the five-iron-test. This is remarkable in light of the anticipated increased drag the larger ball encounters.

Initial live play testing indicates that the 1.74 inch (4.4196 cm) ball offers an easier ball to hit since it sits up higher in grass, gets up in the air easier and is more accurate (straighter) due to its lower spin rates and higher moment of inertia.

In this specification (description, claims, abstract, and drawings), precise values include values about or substantially the same as precise values, e.g. 1.62 ounces (45.9262 grams) includes values about or substantially the same as 1.62 ounces, and such values include e.g. 1.62 ounces. Imperial values include their metric values. The present disclosures include the whole of the description, the appended claims, the appended drawing , and the appended abstract; and modifications or equivalents thereof. It will be apparent to persons skilled in the art that modifications and adaptations may be made without departure from the scope of the appended claims.

CLAIMS:

1. A golf ball , comprising:
a core;
an outer cover having a hardness of at least substantially Shore D60,
said cover having a thickness of at least substantially 0.125 inches (0.3175 cm); and
said ball has an outside diameter in the range substantially 1.73 inches (4.3942 cm) to
substantially 1.75 inches (4.445 cm).
2. A golf ball as claimed in claim 1, wherein said golf ball is a two-piece golf ball.
3. A golf ball as claimed in claim 1 or 2, wherein the diameter of said core is
dependent upon a selection of said outside diameter and said thickness.
4. A golf ball as claimed in any one of claims 1 to 3, wherein said cover hardness is
a hardness between Shore D60 and Shore D80.
5. A golf ball as claimed in any one of claims 1 to 3, wherein said cover hardness is
a hardness between Shore D65 and Shore D75.
6. A golf ball as claimed in any one of claims 1 to 3, wherein said cover hardness is
a hardness between Shore D65 and Shore D70.
7. A golf ball as claimed in any one of claims 1 to 6, wherein said cover has a
thickness in the range substantially 0.125 inches (0.3175 cm) to substantially 0.184
inches (0.4674 cm).
8. A golf ball as claimed in claim 7, wherein said cover has a thickness in the range
substantially 0.125 inches (0.3175 cm) to substantially 0.150 inches (0.381 cm).

9. A golf ball as claimed in claim 8, wherein said cover has a thickness in the range substantially 0.125 inches (0.3175 cm) to substantially 0.145 inches (0.3683 cm).

10. A golf ball as claimed in any one of claims 1 to 9, wherein said cover has a thickness of substantially 0.135 inches (0.3429 cm).

11. A golf ball as claimed in any one of claims 1 to 10, wherein said outside diameter is substantially 1.74 inches (4.4196 cm).

12. A golf ball as claimed in any one of claims 1 to 11, wherein said core has a diameter C, said outside diameter is a diameter D, and said cover thickness is a thickness T, such that $D = C + 2T$.

13. A golf ball as claimed in any one of claims 1 to 12, wherein said golf ball has a weight of no greater than substantially 1.62 ounces (45.9262 grams).

14. A golf ball as claimed in any one of claims 1 to 13, wherein said golf ball is a dimpled golf ball.

15. A golf ball as claimed in claim 14, wherein said dimpled golf ball has a tri-dimple pattern having 422 dimples.

16. A golf ball as claimed in claim 1, substantially as hereinbefore described with reference to and as shown in the accompanying drawing.



The
Patent
Office

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Application No: GB 9722641.9
Claims searched: 1 to 16

Examiner: Alan Blunt
Date of search: 12 February 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): A6D (DAB, DB)

Int Cl (Ed.6): A63B 37/00, 37/12. 69/36

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB2302037A (BRIDGESTONE) - Ex E5, Table 2	1 to 16
X	US5470075 (NESBITT) - column 2 lines 54 to 58	1 to 16
A	US4201384 (BARBER) - Fig 1D	

<input checked="" type="checkbox"/> Document indicating lack of novelty or inventive step	<input type="checkbox"/> Document indicating technological background and/or state of the art.
<input checked="" type="checkbox"/> Document indicating lack of inventive step if combined with one or more other documents of same category.	<input type="checkbox"/> Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	<input type="checkbox"/> Patent document published on or after, but with priority date earlier than, the filing date of this application.

Golf ball

Patent Number: GB2321018
 Publication date: 1998-07-15
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 Applicant(s): LISCO INC (US)
 Requested Patent: JP10211301
 Application Number: GB19970022641 19971028
 Priority Number(s): US19970782199 19970110
 IPC Classification: A63B37/00
 EC Classification: A63B37/00G
 Equivalents: AU4188197, AU725358, CA2218151

Abstract

A golf ball of improved playing characteristics weighs no more than substantially 1.62 ounces and has a core and an outer cover, an outside diameter in the range substantially 1.73 inches (4.3942 cm) to substantially 1.75 inches (4.445 cm), an outer cover thickness of substantially 0.125 inches (0.3175 cm) or greater, and a cover hardness of Shore D60 or greater.

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Description

GOLF BALL

This invention relates to golf balls. In particular, it relates to a two-piece golf ball having playability characteristics which are improved relative to state-of-the-art balls.

According to United States Golf Association (U.S.G.A.) rules, a golf ball may not have a weight in excess of 1.620 ounces (45.926 grams) or a diameter smaller than 1.680 inches (4.267 cm). The initial velocity of U.S.G.A. "regulation" balls may not exceed 250 feet per second (76.2 meters per second) with a maximum tolerance of 2%.

Initial velocity is measured on a standard machine kept by the U.S.G.A. A projection on a wheel rotating at a defined speed hits the test ball, and the length of time it takes the ball to traverse a set distance after impact is measured. U.S.G.A. regulations also require that a ball not travel a distance greater than 280 yards (256.032 meters) when hit by the

U.S.G.A. outdoor driving machine under specified conditions. In addition to this specification, there is a tolerance plus 4% and a 2% tolerance for test error.

These specifications limit how far a golf ball will travel when hit in several ways.

Increasing the weight of a golf ball tends to increase the distance it will travel and lower the trajectory. A ball having greater momentum is better able to overcome drag.

Reducing the diameter of the ball also has the effect of increasing the distance it will travel when hit. This is believed to occur primarily because a smaller ball has a smaller projected area and, thus, a lower drag when travelling through the air. Increasing initial velocity increases the distance the ball will travel.

The foregoing generalizations hold when the effect of size, weight, or initial velocity is measured in isolation. Flight characteristics (influenced by dimple pattern and ball rotation properties), club head speed, launch angle, radius of gyration, and diverse other factors also influence the distance a ball will travel.

In the manufacture of top-grade golf balls for use by professional golfers and amateur golf enthusiasts, the distance a ball will travel when hit (hereinafter referred to as "distance") is an important design criterion. Since the U.S.G.A. rules were established, golf ball manufacturers have designed top-grade U.S.G.A. regulation balls to be as close to the maximum weight, minimum diameter, and maximum initial velocity as golf ball technology will permit. The distance a ball will travel when hit has, however, been improved by changes in raw materials,

(19)日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平10-211301

(43)公開日 平成10年(1998)8月11日

(51)Int.Cl.[®]

A 6 3 B 37/12
37/00

識別記号

F I

A 6 3 B 37/12
37/00

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審査請求 未請求 請求項の数8 FD (全5頁)

(21)出願番号

特願平9-364740

(22)出願日

平成9年(1997)12月22日

(31)優先権主張番号 08/782199

(32)優先日 1997年1月10日

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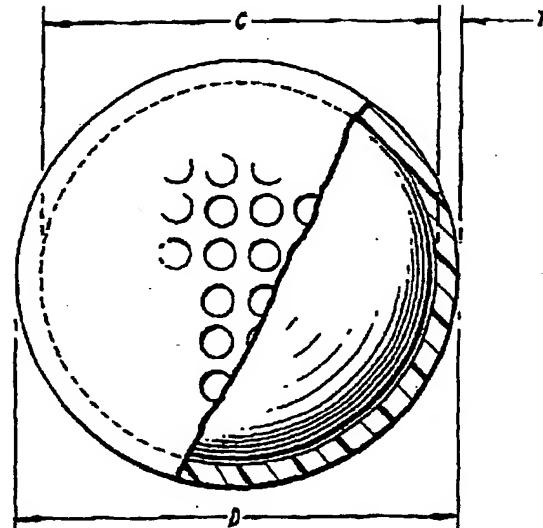
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(54)【発明の名称】 ゴルフボール

(57)【要約】

【課題】 1. 62オンスより重くない重量を持ち、改良されたプレー特性を持つゴルフボールを提供することにある。

【解決手段】 本発明のゴルフボールは、コア及びカバーを持ち、平均外径Dが1.73インチないし1.75インチ、カバー厚さTが0.125インチ又はそれ以上で、カバー硬さがショアD60又はそれ以上である。



【特許請求の範囲】

【請求項1】 コア及び外部カバーを備え、前記外部カバーが、ショアD60又はそれ以上の硬さを持ち、前記外部カバーが0.125インチ又はそれ以上の厚さを持ち、前記ゴルフボールの外径が1.73ないし1.75インチである、改良されたプレー特性を持つゴルフボール。

【請求項2】 前記外部カバーが、ショアD60ないしショアD80の硬さを持ち、この外部カバーが、0.125ないし0.150インチの厚さを持つ請求項1のゴルフボール。

【請求項3】 前記外部カバーの硬さが、ショアD65ないしショアD75である請求項1のゴルフボール。

【請求項4】 前記外部カバーの硬さが、ショアD65ないしショアD70である請求項1のゴルフボール。

【請求項5】 前記外部カバーが、0.125ないし0.184インチの厚さを持つ請求項1のゴルフボール。

【請求項6】 前記外部カバーが、約0.135インチの厚さを持つ請求項1のゴルフボール。

【請求項7】 前記ゴルフボールの外径が、約1.74インチである請求項1のゴルフボール。

【請求項8】 前記ゴルフボールの重量が、1.62オンスより重くない請求項1のゴルフボール。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明はゴルフボールに関する。ことに本発明は、現在のゴルフボールに対して改良されたプレー特性 (playability characteristic) を持つツーピース・ゴルフボールに関する。本発明は、1991年11月27日出願の米国特許願第800,198号すなわち米国特許第5,273,287号のCIPである、1993年1月22日出願の米国特許O8/171,956号すなわち米国特許第5,503,379号の分割出願である、1995年9月20日出願の米国特許O8/530,851号明細書のCIPに係わる。

【0002】

【従来の技術】米国ゴルフ協会 (U.S.G.A.) 規格によれば、ゴルフボールは、1.620オンスを越える重量又は1.680インチより小さい直径を持たなくともよい。U.S.G.A. 「規制」ゴルフボールの初速は2%の最大公差で250 ft/secを越えなくてよい。初速はU.S.G.A. 保有の標準機械で測定される。或る規定された速度で回転する車輪の突起部を試験ゴルフボールに当て、このゴルフボールが打撃後に或る設定距離を飛ぶのにかかる時間を測定する。U.S.G.A. 規制は又、特定の条件のもとでU.S.G.A. 戸外駆動機械により打つときにゴルフボールが

280ヤードより長い距離を飛ばないことを必要とする。この規格のほかに公差プラス4%と試験誤差に対する2%公差がある。

【0003】これ等の規格は、複数の方式で当たるときにゴルフボールの飛ぶ距離を制限する。ゴルフボールの重量を増すと、このゴルフボールの飛ぶ距離が増し軌道を低めるようになる。一層大きい運動量を持つゴルフボールは抗力に一層良好に打勝つことができる。ゴルフボールの直径を減らすと又、打ったときにこのゴルフボールの飛ぶ距離が増す効果がある。このことは、一層小さいゴルフボールの方が一層小さい投影面積、従って空気中を飛ぶときの一層低い抗力を持つから主として得られると考えられる。初速を増すと、ボールの飛ぶ距離が増す。

【0004】以上述べた所は、寸法、重量又は初速の影響を別個に測定するときに当てはます。飛行特性 (dimensional patterns and golf ball spin characteristics) により影響を受ける)、クラブヘッド速度、打上げ角度 (launch angle)、回転半径及びその他の種々の要因も又ゴルフボールの飛ぶ距離に影響する。

【0005】プロゴルファー及びアマチュア・ゴルフファンの使用する最高級ゴルフボールの製造に当たっては打ったときのゴルフボールの飛ぶ距離 (以下「距離」と称する) は設計上の重要な判定基準である。U.S.G.A. 規格が設定されているから、ゴルフボール製造業者は、最高級のU.S.G.A. 規格ボールをゴルフボール技術で最高重量、最小直径及び最高初速にできるだけ近く作った。しかし打ったときにゴルフボールの飛ぶ距離は、原材料及び構造を変えることにより又デザイン形状の変更により改良された。

【0006】種々の点でU.S.G.A. 規格に適合しないゴルフボールが米国で作られている。U.S.G.A. 規格の有効日付の以前には、種々の重量、直径及び反発力を持つゴルフボールが普通であった。U.S.G.A. 初速限度を越えることを必要とするいわゆる「ラビットボール」も又販売用に提案されている。最近、特大の過大重量のゴルフボールがゴルフ教授補助具としての使用のために販売されている [バーバー (Barber) を発明者とする米国特許第4,201,384号明細書参照]

【0007】大形のゴルフボールは又、本譲受人のプレディセッサ (Predecessor) に与えられた。1980年1月1日付ニュージランド国特許第192,618号明細書にも記載してある。この特許明細書には、1.700ないし1.730インチの直径と弾力性材料から成る大形のコアとを持ち反発計数を高めるようにした大形ゴルフボールについて記載してある。さらにこの特許明細書には、ゴルフボールが従来のゴルフボールのカバー厚さより薄い厚さを持つカバーを備えることを記載してある。

【0008】本願の親特許明細書に記載であるようにトップーフライト (TOP-F L I T E) [登録商標] の名称のもとに作られているゴルフボールは、約1.72インチの直径と約0.88インチのカバー厚さを持つ。

【0009】1915年スポールデイング (S p a l d i n g) 社により作られたゴルフボールは、1.630インチからの或る範囲にわたる直径を持っていた。ボールの直径の増大に伴いボールの重量も増した。

【0010】LYNX JUMBOとして知られるゴルフボールも又1979年10月に作られ市販された。このゴルフボールは約1.80インチの直径を持っていた。このゴルフボールは商業的にはほとんど又は全く成功しなかった。

【0011】米国で販売されている高級ボールは2種類の一方としてすなわちツーピース又はスリーピースに分類される。スポールデイング社から登録商標名トップ・ライトとして市販されるゴルフボールで例示したツーピースボールはソリッド (solid) 高分子コアと、別個に形成したカバーとから成っている。たとえばアカシュネット・カムバニ (Acushnet Company) により商標名タイトリスト (T I T L E I S T) として市販されるボールのようないわゆるスリーピースボールはリキッド (liquid) [たとえばタイトリスト・ツアー (T I T L E I S T TOUR) 384] 又はソリッド (solid) (たとえばタイトリストDT) の中心部と、このまわりのエラストマー質巻き糸 (thread windings) とカバーとから成る。カバーの性質は、若干の例ではボールの全反発係数及び初速に極めて役立つ [たとえばモーリター (M o r i t o r) を発明者とする米国特許第3,819,768号明細書参照] が、ツーピース及びスリーピースのゴルフボールの初速は主としてコアの反発係数によって定まる。糸巻きゴルフボールのコアの反発係数は、巻き糸の張力と糸及び中心部の組成とを調整することにより限度内で制御することができる。ツーピースボールに関してはコアの反発係数は、このコアが作られた、エラストマー質組成物の性質による。ソリッドコアは今日典型的には、アクリル酸エステル (acrylate) 又はメタクリル酸エステル (methacrylate) の金属塩を混合したポリブタジエンエラストマーを使って成形する。コア材料には、最高のU. S. G. A. 重量限度が得られるように酸化亜鉛のような高密度の充てん材を含ませる。

【0012】カバー及びコアの材料組成の改良とディン
試験#1-距離
ローンチ (LAUNCH) 条件
クラブ形式
クラブヘッド速度 (f p s)
打上げ角度 (°)

ブルバターンの変更とにより過去20年来ゴルフボール飛距離は一般に絶えず改良されている。しかし高級ゴルフボールは複数のその他の重要な設計基準に適合しなければならない。現用のゴルフボール市場で有効に競争するには、ゴルフボールはカッティング (cutting) に耐え、良好な仕上げを行い、バッティングの際にラインを保持し又良好な音及び感じを持たなければならぬ。良好に作られたボールでは、経験を積んだゴルファーは場合に応じドロー、フェード又はアプロート・ストップ (abrupt stop) 急停止を含むショットを一層良好に行うことができる。

【0013】

【発明の開示】本発明のゴルフボールは、従来提案された大形ゴルフボールに対し改良したものである。本発明ボールは少なくとも1.73インチの比較的大きい直径を持っていても、標準のゴルフボールに対し実質的に同じ寸法の又は一層小さい寸法のコアを使うのがよく、寸法の違いはゴルフボールのカバーの付加的な厚さによって生ずる。本ゴルフボールは、少なくとも0.125インチのカバー厚さ、ショアD 60又はそれ以上のカバー硬さ及び1.62オンスより重くない重量を持つ。

【0014】

【実施例】以下の説明は図示のようなツーピース・ゴルフボールの一般的構造に係わる。本発明ボールは、外径D、コア直径C及びカバー厚さTを持つ。すなわち外径DはC+2Tに等しい。

【0015】本発明ボールは、1.73インチないし1.75インチの外径Dと0.125インチないし0.145インチのカバー厚さTとを持つ。コアの直径Cは選定する外径及びカバー厚さによる。

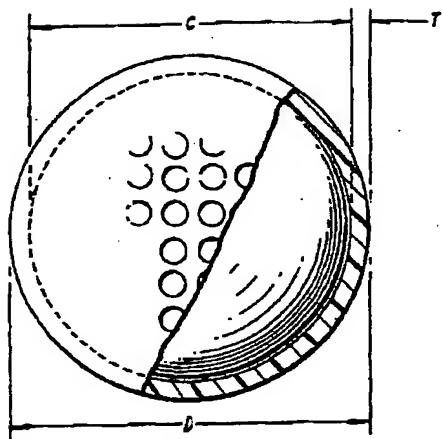
【0016】米国特許第5,273,287号明細書により作られているゴルフボールは、直径約1.72インチ、重量約1.62オンスで約0.088のカバー厚さを持つ。このゴルフボールは登録商標トップーフライトマグナ™ (T o p - F l i t e M a g n a™) として市販されている。次の試験結果は、このゴルフボールを約1.74インチの直径と約0.135 inのカバー厚さを持つボールと比較したものである。これ等の両方のボールは、これ等の試験で、米国特許第5,273,287号明細書にその図3及び4について述べた図示のような422個のディンプルを持つトライディンプル・パターン (tri-dimple pattern) である同じ基本ディンプル・パターンを持つ。

【0017】

【表1】

5番アイアン	
123	
15.3	

【図1】



フロントページの続き

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